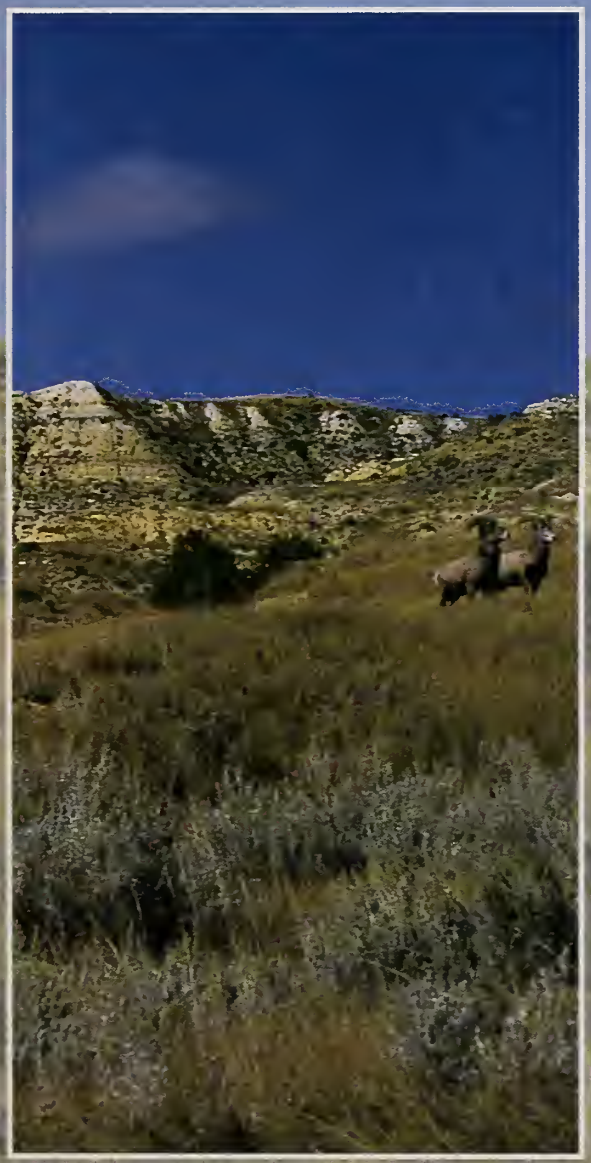

United States
Department of Agriculture

Natural Resources
Conservation Service

Program Aid Number 1552w

Non-Federal Grazing Lands in the United States

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Introduction

Non-Federal grazing lands (range, pasture, hay, and grazed forest) make up approximately one-third of the Nation's land—642 million acres! If managed wisely, these lands, the plants that grow on them, and the domestic and wild animals that graze on them contribute to the environmental, economic, and social well-being of our Nation. Well-managed, healthy grazing lands are important for food and fiber, water quantity and quality, wildlife habitat, recreational opportunities, sustainable agriculture and rural life, and mitigation of global climate change.

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Properly managed grazing is one of the most energy-efficient ways of producing food and fiber

Grazing by domestic livestock has been the primary use of non-Federal grazing lands since European settlement and remains one of the most important today. Meat, milk, leather, wool, and mohair are well-known products that grazing animals provide humans. Less well-known are the pharmaceuticals that are produced from nonfood and nonfiber parts of the animals; natural fertilizers that are made from the bones, blood, and manure; and new and unique uses of familiar products—such as using wool, which readily absorbs oil, to remove spilled oil from soils, streams, lakes, and oceans.

Improving the efficiency of grazing land production can increase the landowner's income, improve environmental quality, and help reduce the Nation's dependence on imported fossil fuel energy. Grazing animals eat plants that cannot be digested by humans and many other animals. Little fossil fuel energy is used in range, pasture, and grazed forest forage production. Up to 2 calories of food and fiber energy can be produced from 1 calorie of fossil fuel energy on properly managed grazing land. Many other agricultural crops require from 5 to 10 calories of fossil fuel energy for every calorie of food or fiber produced.

◆ *Native grazing animals are part of our Nation's natural resource heritage (photo by Jack Dykinga, K5680-1).*

The Grazing Lands Conservation Initiative

The Grazing Lands Conservation Initiative (GLCI) is a national grassroots effort to enhance the quality and quantity of technical assistance available to owners of private grazing lands. The impetus behind this national effort is the commitment of private landowners to improve voluntarily the condition of their grazing lands and properly manage their land resources. Technical assistance is needed to sustain and improve these lands for the production of food, fiber, and other products valued by society and for the economic well-being of the farms, ranches, and rural communities.

The Initiative is led by a coalition of private grazing landowners and managers working through several national conservation, environmental, scientific, and producer organizations—including the American Farm Bureau Federation, the American Forage and Grassland Council, the American Sheep Industry, the National Cattlemen's Association, The Nature Conservancy, the Society for Range Management, the Soil and Water Conservation Society, the USDA Extension Service and Land-Grant Universities, the USDA Natural Resources Conservation Service, and individual dairy farmers. The purposes of the Initiative are to:

- Strengthen partnerships through improved communication and coordination;
- Promote voluntary application of conservation practices and respect for private property rights;
- Encourage integration of conservation technical assistance and landowner management decisions into useful, comprehensive resource management plans;
- Ensure adequate technical assistance from personnel trained in range and pasture management to help landowners, who request assistance, to improve the ecological and economic condition of their farms and ranches;
- Encourage enterprise diversification in order to achieve greater economic, environmental, and social benefits;
- Ensure adequate research, training, and educational programs in grazing land management; and
- Increase public awareness of the importance of private grazing land resources.

The GLCI national steering committee has developed and provided information to national and State policy makers, landowners, and the general public about the importance of grazing lands and the need for improved management. In addition to supporting programs to provide technical assistance to private landowners, the steering committee has encouraged the expansion of research and educational programs to develop and extend scientific knowledge on the proper use and management of grazing lands. The steering committee has helped establish active GLCI programs in several States.

◆ *Well-managed grazing lands provide clean, abundant water for recreation and for use by industry, agriculture, and domestic water supplies (USDA-NRCS photo).*

Vast quantities of precipitation fall on the Nation's grazing lands

Much of the water from rain or snow infiltrates the soil and is used for plant growth, is stored in underground aquifers, or flows through the soil—providing water for stream flow, riparian areas, wetlands, and lakes. Some precipitation runs off the land, however, causing erosion. Although some runoff and erosion are natural, accelerated erosion on degraded land reduces the land's production potential and causes offsite damage from sedimentation. Conservation of soil and water resources on grazing lands to sustain healthy and productive ecosystems is one of the most important goals of grazing land management.

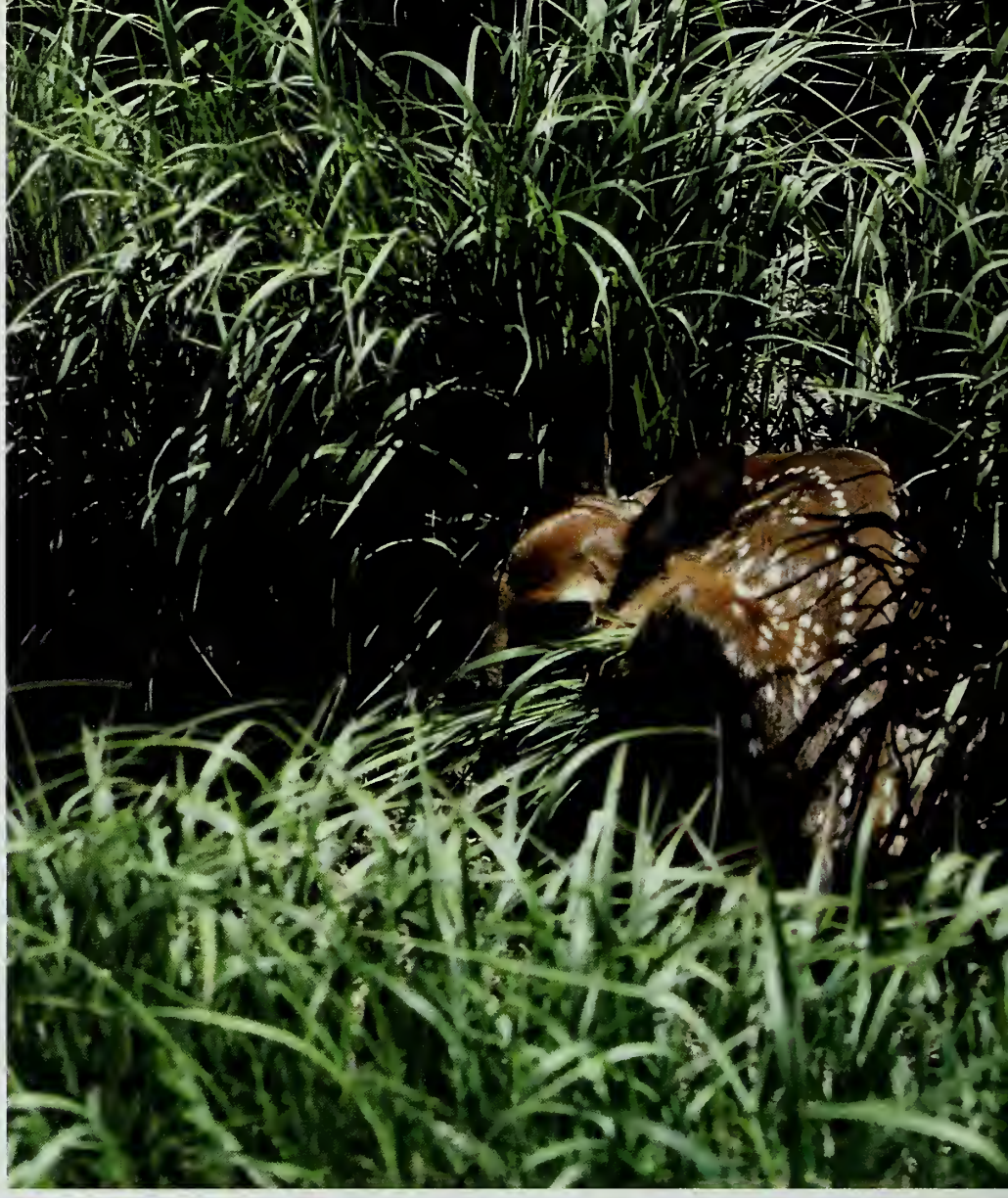
The Malpai Borderlands Group

In southern New Mexico and Arizona, private landowners and management agencies are cooperating to develop and implement a natural resource management plan on approximately 1 million acres of land that lies along the border with Mexico. The land is owned by 38 private landowners, the Animas Foundation, the Bureau of Land Management, the Forest Service, and the States of New Mexico and Arizona. Leadership for this coordinated planning effort includes the private landowners, the Animas Foundation, The Nature Conservancy, the Hidalgo Soil and Water Conservation District in New Mexico, and the Whitewater Draw Natural Resource Conservation District in Arizona.

The participants in the Malpai Borderlands Group were originally drawn together through a common recognition of the ecological importance of fire in the borderland ecosystems. Using this as a starting point, the Group's goal has evolved to a more comprehensive natural resource management and rural development agenda. The Group's goal is, "To preserve and maintain the natural processes that create and protect a healthy, unfragmented landscape to support a diverse, flourishing community of human, plant, and animal life in the borderlands region." They expect to accomplish their goal "by working to encourage profitable ranching and other traditional livelihoods which will sustain the open-space nature of our land for generations to come."

Grazing lands provide habitat for many varieties of wild animals and places of enjoyment for humans

Hunting and fishing are important recreational activities. When many people think of wildlife they think of game species—deer, elk, grouse, trout. Wildlife, however, also has an intrinsic value. Everyone enjoys the unexpected view of a white-tailed deer on a pasture or grazed forest in the Eastern United States, of an antelope in the Northern Great Plains or the Great Basin, of a pheasant in a grassed waterway in the Corn Belt, of a hawk in the desert Southwest, and of a mule deer on rangelands in any of the Western States. People enjoy watching and listening to songbirds and hearing, maybe seeing, a fish jump in a stream or pond. Seeing and hearing the animals, birds, and fish are made more enjoyable by the spectacular scenery that is often associated with grazing lands—the mountains of the West, the stark desert landscape of the Southwest, the prairie vistas of the Great Plains, and the green grass of pastures contrasted with the fall color of trees in the East.



Grazing lands are being used increasingly as sites for disposing of wastes

As confined animal production facilities—poultry and swine farms, beef feedlots, and confinement dairies—have become larger and more concentrated in a few geographical areas, cities have begun to run out of landfill space. Thus grazing lands have become attractive locations on which to spread organic wastes and recycle the nutrients they contain. Spreading poultry litter on pastureland in the Southern and Eastern United States has allowed landowners to improve forage production and develop a more successful beef industry.

When properly applied on well-managed grazing land, organic wastes can enhance the land's productivity by increasing soil organic matter, improving the capacity for the soil to hold moisture, and supplying valuable nutrients. If wastes are applied to degraded land, or if the wastes are applied in excess of the ecosystem's capacity to absorb them, organic matter and the nutrients in the wastes can wash into streams, lakes, and estuaries, causing serious water quality degradation.

◆ *Grazing lands provide important habitat for many wildlife species (photo by Mike Knudson).*

Watershed Coalition Works To Improve Riparian and Salmon Habitat

Riparian areas, the land that lies adjacent to a stream and on which grows increased amounts of vegetation because of surface or ground water from the stream, are some of the most valuable lands and important habitats found on grazing lands. Well-managed riparian vegetation protects water quality by working as a buffer strip to filter sediment and other pollutants from runoff water before it reaches the stream. Stream bottoms remain free of sediment. Healthy riparian area soils, filled with plant roots, act like a sponge and store moisture during the wet season when water is plentiful and release it during the dry season when water is scarce. The plants and their roots stabilize stream banks, improving the stream habitat for fish. The plants—grasses, forbs, shrubs, and trees—provide food and cover for domestic and wild animals and desirable recreational sites for humans.

Unfortunately, because of the desirability of riparian areas for so many uses, they are sometimes overused and many of the benefits are lost. Sometimes the stream system can be disturbed so severely that the benefits cannot be restored. Ranchers, anglers, members of environmental organizations, Federal and State agency staff, and others have formed the Oregon Watershed Coalition to improve watershed and riparian conditions, improve and protect water quality, and sustain the various uses of the land including livestock grazing, salmon spawning habitat, wildlife habitat, and recreational opportunities. The Coalition has used the process of Coordinated Resource Management to analyze problems, identify possible solutions, and decide, by consensus, what actions to take.

Work of the Coalition has resulted in: (1) private citizens volunteering time and materials to construct fish management and stream improvement structures in streams and riparian zones, (2) private landowners and Federal agencies coordinating use of their grazing lands so that livestock grazing that benefits the riparian habitat can be implemented, and (3) campsites and roads being managed to benefit watersheds and riparian areas. The Coalition has conducted numerous educational programs for ranchers, policy makers, and citizens including many youth programs. The Coalition has provided a forum where people with different ideas and interests can cooperate to find common ground to accomplish a common goal, the improved management of riparian ecosystems.

Grazing land forage plants and enterprises are important to sustainable agriculture and rural America

During the first half of this century, most farms included both crop and grazing land-based livestock enterprises. Cattle, sheep, and goats provided a way for farmers to make use of land that could not be cultivated with the technology available at the time. New technology and new marketing opportunities in the 1970's encouraged farmers to plow lands that had not been previously cultivated. Unfortunately, some highly erodible lands were plowed and planted to crops. Increased erosion from fields planted "fence row to fence row" caused farmers and Congress to take action to protect soil and protect water quality.

Incorporating grazing land management into the farming system is one of the most important ways a row crop farmer can reduce erosion and water pollution and diversify sources of income. For example, natural drainage areas on farms and the riparian areas adjacent to streams can be planted to soil-conserving forage plants. These plants capture runoff and sediment from the fields and protect water quality. If sufficient plant material is left in grassed waterways or stream buffer zones for soil and water conservation purposes, some of the plant material can be harvested mechanically or consumed by grazing animals. Such outdoor recreational activities as hiking, camping, horseback riding, hunting, and fishing may provide other options for earning income from grazing lands.

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◆ *Grazing management includes the movement of animals to improve plant growth and animal nutrition (K4341-8).*

Sheep and Goats Control Noxious Weeds and Brush

Leafy spurge, a noxious weed introduced into the United States, has invaded millions of acres of grazing lands in the northern Great Plains. Unlike many weed problems, this one does not occur just on grazing lands in poor condition, but on healthy land as well. The weed can be controlled with herbicides, but this approach is expensive and leafy spurge will reinvade the area in a few years. Cattle do not eat leafy spurge, so invasion by the plant greatly reduces the value of the land for cattle grazing. Sheep and goats, fortunately, do eat this weed and can control it.

Sheep and goats are browsers—that is, they eat the woody stems of shrub or brush plants. To take advantage of this characteristic, landowners and managers throughout the country are using sheep and goats to accomplish such important goals as reducing the amount of woody fuel that could burn in a wildfire and releasing desirable trees from the competition of low-growing brush plants.

These approaches to "biological control" result in environmentally sound and cost-effective ways to manage weeds and brush and to produce the food and fiber products that society desires. Implementing such management programs requires knowledge of how ecosystems function, knowledge of the characteristics of the plants to be controlled, and knowledge of the behavior of the grazing animals. Successful weed and brush management programs are ones through which the proper control method is applied with good grazing management.

◆ *Because sheep are less affected by larkspur, they may be used to reduce the amount of it in mountain pastures before cattle are allowed to graze. In this study, range scientist Michael Ralphs records the plant preferences of the sheep (ARS, K4378-10).*

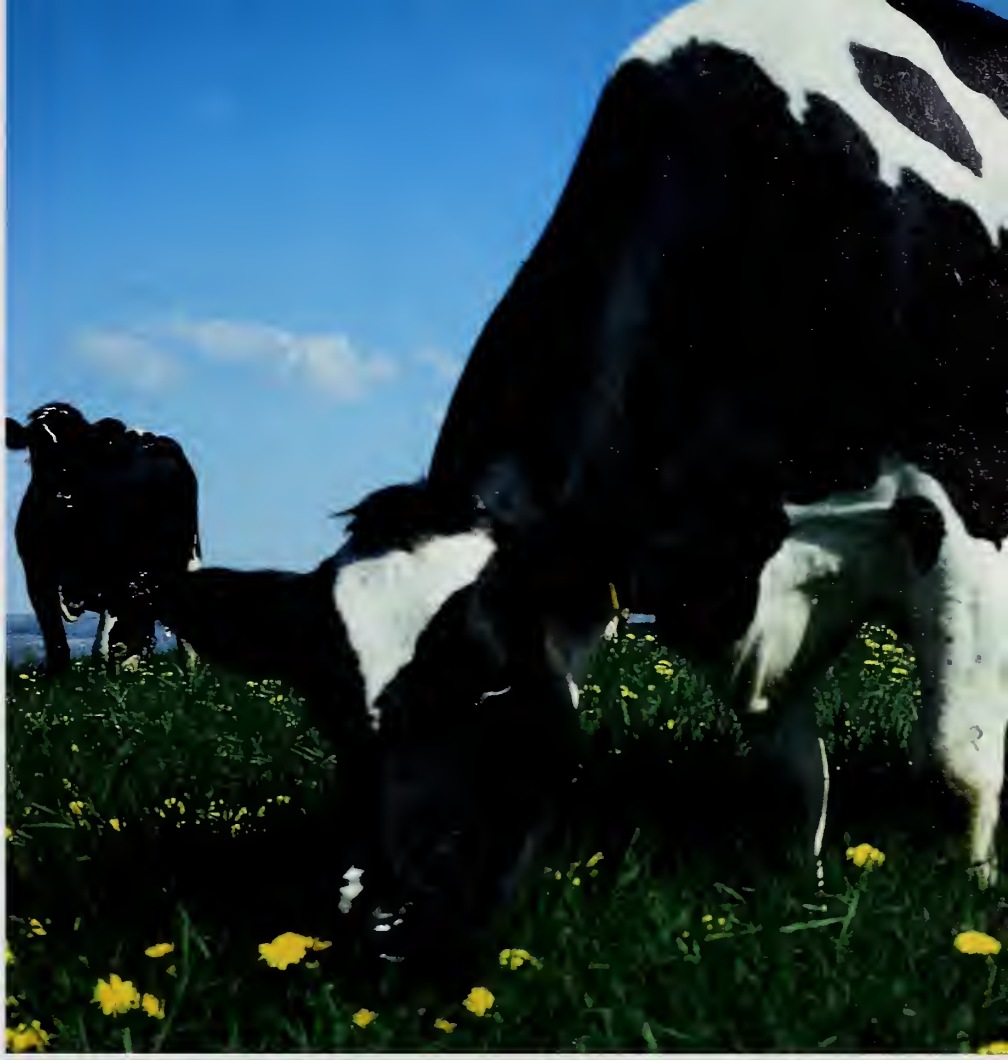
◆ *Sheep graze near Odell Lake in the Centennial Mountains of Southwestern Montana (photo by Scott Bauer, K5629-2).*

Ranchers Increase Water Supply, Protect Water Quality

In dry central and west Texas, water is a valuable commodity not to be wasted or spoiled. Years ago ranchers in the Rocky Creek Watershed near San Angelo began to notice two things happen. At first, the two things did not seem related. The ranchers observed that mesquite—a low-growing tree of little forage value for livestock or wildlife—was increasing on their rangelands and natural water sources were going dry. The relationship of these events to each other became apparent when the ranchers began controlling the spread of mesquite. As the trees were removed from the land, water began to flow from springs and streams appeared in dry stream beds. Research confirmed that the mesquite trees used large quantities of water and that thick infestations of the plant could use enough water to cause a stream to go dry.

Ranchers and city dwellers welcomed the news that mesquite tree management—commonly called "brush control"—might release valuable moisture as surface and ground water. Towns and cities began to look for partners in rural areas to augment urban water supplies. Seco Creek, a 171,000-acre watershed 50 miles from San Antonio was one of many places where such partnerships developed. San Antonio and the rural communities in the watershed needed water, and landowners in Seco Creek wanted to improve the condition and management of their land. Ranchers have carried out brush management, pasture planting, and grazing management practices to protect water quality and increase water supplies. They have established buffer zones along the streams that filter sediment and other pollutants from runoff. Monitoring of water quantity and quality indicates that the treatments, voluntarily applied by the ranchers, have increased the amount of good-quality water entering the Edwards Aquifer which is the source of San Antonio's water supply. Because almost 90 percent of the watershed is grazing land, Seco Creek has become an excellent example of how grazing land management can benefit landowners, as well as rural and urban residents.

◆ *Well-managed pasture provides high-quality nourishment for lactating dairy cows (photo by Darrell Emmick).*



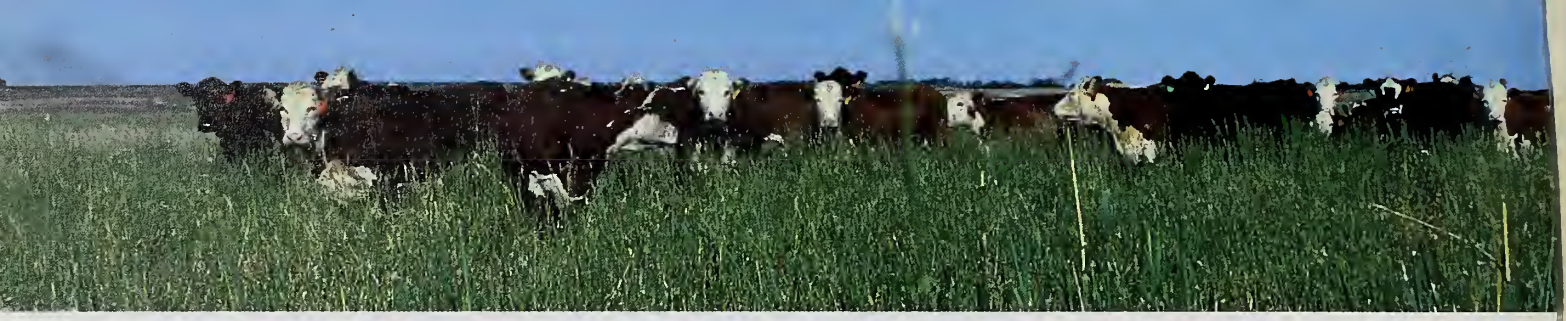
Dairy Production on Grazing Land

During the past twenty or thirty years, the trend in the dairy industry has been to confine cows in areas near where they are milked. Feed is harvested in the field and transported to the animals. Manure is returned to the fields as a valuable fertilizer. Some dairy farmers—located in all parts of the country—have begun to graze their cows on pasture and are reporting many benefits. Probably the most important benefit is that of reducing the cost of feed, the largest operating expense on a dairy farm. Farmers in Vermont, New York, and Arkansas have reported saving as much as $150 per cow per year in the cost of feed by allowing the animals to graze and harvest much of their own feed.

A second important advantage of grazing-based dairy production has been in reducing the cost and labor needed to manage the manure. When animals are well managed, they spread the manure themselves on the pasture. This reduces the cost of production.

Successful grazing-based dairy production requires careful management of the land, forage plants, and livestock. Most dairy farmers trying this approach are dividing their land into small pastures, and animals stay on a unit for only a few days. Following a period of intensive grazing, an area is rested to allow the forage plants to regrow and the soil to recover from compaction. Because the units are small, animals use the entire area in a uniform fashion. This helps ensure that the manure is spread over the entire area. Keeping the animals in one herd on a few acres of land allows the farmer to observe the animals and provide health and other care as needed.

To promote proper grazing land management, leaders in New York initiated the Graze New York program which provides information, education, and technical assistance to dairy farmers. Information and educational programs have included formal lectures, onfarm workshops and tours, and the production and dissemination of printed material. Technical assistance involves onfarm planning with farmers who request such assistance.



Proper Grazing Management Protects Water Quality and Sustains Swine and Poultry Industries

Production of poultry and swine in confinement has been the common practice in the Southeastern United States. The manure from these production facilities has been used as a fertilizer for pastures and has helped the region improve its beef industry. Combining income from poultry, swine, cattle, and hay has allowed many small farms to remain in business and has helped sustain many rural communities.

When the proper amount of manure is correctly applied on suitable, well-managed grazing lands, economic, environmental, and social goals of landowners and society can be met. When manure is applied on land where the forage crop has been closely grazed or mechanically harvested for hay, nutrients and organic matter can wash off. This causes serious degradation of water quality. Proper animal waste management is essential for the sustainability of the swine and poultry industries. Attention must be paid, therefore, to the amount of forage that remains on the land to protect the area from runoff as well as to the amount of manure that is applied.

◆ *'Forestburg' is a productive and nutritious forage grass used for tame pasture in the Northern Great Plains (photo by Russ Haas).*

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Grazing lands remove carbon dioxide from the air

Carbon dioxide and other greenhouse gasses are increasing in the Earth's atmosphere, potentially causing changes in global climate. Grazing land plants remove carbon dioxide from the air through the process of photosynthesis and store it in the soil as the belowground plant parts die and decompose. Grazing land soils in the Great Plains have been found to contain over 40 tons of carbon per acre while cultivated soils contain 26.

Cultivated lands planted to grassland plants as part of the Conservation Reserve Program (CRP) were found to have gained an average of one-half ton of carbon per acre per year during the first 5 years after planting. This means that 18 million tons of carbon are being removed from the atmosphere each year as a result of farmers putting over 36 million acres of land in the CRP.

◆ *Native prairie grasses dominate most of the grazing of the Great Plains (photo by Dean Chamrad).*

Grazing lands are a source of biomass energy and raw materials for industrial products

Other options for using grazing land plants in soil and water conservation plantings are as biomass energy or as feed stocks for industrial chemicals and materials. A growing interest in using plant materials for energy stems from the dependence of the United States on foreign oil, as well as from a concern that the release of fossil carbon into the atmosphere will lead to climate change. Using "home-grown" plant material for energy would reduce to some extent the amount of oil we import. Although burning plants for energy releases carbon dioxide into the air, this carbon is offset by the carbon captured from the atmosphere through the process of photosynthesis. Biomass carbon is, therefore, a renewable resource.

The health of grazing lands is important

Inappropriate grazing land management often leads to a less productive mix of plants, to soil that may be compacted and exposed to the erosive forces of wind or water, and to the loss of the land's capacity to self-regenerate. Collectively, this deterioration is called "loss of grazing land health." Loss of health means that some options for current and future uses of the land have been lost.

◆ *Native juniper species encroach on Steens Mountain rangeland as a result of reduced fire frequency, past land-use practices, and ideal climatic conditions (ARS, K5408-1).*

◆ *Healthy vegetation is a goal of grazing lands management (photo by Ron Nichols).*

Conclusion

The non-Federal grazing lands of the United States are important—not only to landowners, but to all citizens. Proper management of these lands is essential for the sustainable production of food and fiber, in addition to supporting a wide diversity of other uses.

Although most grazing lands are not suited to cultivation because of topographic, climatic, or soil limitations, these lands do produce plants that can be grazed by livestock to produce meat, milk, wool, and numerous other products that benefit humans. Properly managed grazing harvests a renewable resource and is a cost-effective and energy-efficient way to produce food and fiber.

Vast quantities of water fall annually as rain and snow on private grazing lands. When properly managed, these lands provide a dependable, high-quality supply of water for domestic, agricultural, environmental, and industrial uses.

Grazing lands provide food, water, and cover for wild animals and birds. A large variety of wildlife species depend on private grazing lands for some or all of their habitat needs.

Through proper application of animal manure and other nutrient sources on grazing lands, nutrients can be recycled to increase plant production in an environmentally sound and economically beneficial way.

◆ *Private grazing lands provide habitat for many game birds, songbirds, and waterfowl (USDA-NRCS photo).*

Some of the Nation's most spectacular landscape features are located on private grazing lands. These lands offer many outdoor recreational opportunities, such as hiking, camping, hunting, and fishing.

Healthy grazing lands provide an important economic base for individual landowners and the communities where they live, and they contribute to the sustainability and quality of life of rural and urban residents.

Land resources have benefited as a result of landowners and other interested groups taking a more comprehensive approach to grazing land management. For example:

- As a result of improved plant cover and soil condition, more precipitation soaks into the soil and less runs off. Water quality improves as landowners and managers more effectively control soil erosion and other water quality problems. Physical and economic damage from sediment and other pollutants is reduced. Water quantity and the length of water availability increases in some areas. Agriculture, rural and urban residents, and industry benefit from these improved conditions.
- As a result of improved plant cover and watershed conditions, wildlife and fish populations benefit. This increases opportunities for consumptive and nonconsumptive uses of wildlife, thus improving the economic conditions and quality of life of farm and ranch families, rural residents, and others who enjoy interaction with wild animals, birds, and fish.
- As a result of improved environmental and economic conditions, increased opportunities will develop for farmers, ranchers, and rural communities to expand their business enterprises to offer outdoor recreational activities.
- As a result of proper grazing management and improved environmental conditions, atmospheric carbon is sequestered in the soil, improving soil quality and reducing the likelihood of a greenhouse effect causing global climate change.

October 1996

COVER: Native grazing lands provide esthetic appeal with their scenic beauty and diversity of plant and animal life (photo by Dennis Froemke).